

## SEVERE LOCAL STORMS, AUGUST, 1927—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Casper County, Wyo.....	22	2:45 p. m.			\$12,000	Heavy hail.....	Windows, roofs, and auto tops pierced; crops injured.	Official, U. S. Weather Bureau.
Gordon, Ohio (1½ miles east of).	23	P. m.				Tornado.....	Buildings, crops, and trees damaged.....	Do.
Savannah, Ga.....	25	4 p. m.				Wind and rain.....	Buildings damaged; streets flooded; 2 persons injured.	Morning News (Savannah, Ga.).
Twodot, Mont.....	25					Hail.....	Serious local damage to grain and hay.....	Official U. S. Weather Bureau.
Salt Lake City, Utah.....	26	1 p. m.				do.....	Considerable damage in business and residential sections.	Do.
Tonasket, Wash.....	27	5-6 p. m.	880		3,000	do.....	Some crop loss.	Do.
Cibecue, Ariz.....	28	7:15 p. m.				Heavy hail.....	Melon and cucumber vines ruined; tomatoes hurt; corn damaged.	Do.
Hancock County, Iowa.....	28	P. m.				do.....	Storm very destructive to crops.....	Do.
Palmetto, Ga.....	29	4:30 p. m.			10,000	do.....	Cotton and corn stripped.....	Do.
Altamont, N. Y.....	29	P. m.	4 mi.		50,000	do.....	Crop and property damage over path 8 miles long.	Do.
Amistad, N. Mex. (near)	30	5-6 p. m.	3,520		3,000	do.....	Beans and row crops destroyed.....	Do.
Beaverhead County, Mont.	30					do.....	Storm covered wide area damaging dry lands wheat fields.	Do.
Orange, Tex. (near).....	31	2:30-3:30 p. m.	10 mi.			Wind and hail.....	1 barn and 15 oil derricks blown down; windows broken.	Do.
Scott County, Kans.....	31	3:20 p. m.	1,320		10,000	Heavy hail.....	Character of damage not reported.....	Do.
Ellinwood, Kans. (near).....	31					do.....	Many roofs riddled; screens and windows broken; crops injured.	Do.

## STORMS AND WEATHER WARNINGS

## WASHINGTON FORECAST DISTRICT

The first tropical disturbance of the season made its appearance on the morning of the 21st, about 300 miles northeast of St. Kitts. At that time it was of considerable intensity, as indicated by the heavy northeast swells reported by the S. S. *Inanda* in approximate latitude 19° N. and longitude 60° W. Undoubtedly this disturbance developed far to the eastward, very likely in the region of the Cape Verde Islands. A letter from Capt. F. C. Seibert of the S. S. *Seekonk* reports that at 5:40 p. m., in latitude 22° 46', longitude 63° 00', a barometric pressure of 28.38 inches and winds of hurricane force shifting from northeast to east-south-east. A delayed report from the S. S. *Maraval* at 1 a. m., August 22, in latitude 22° 48', longitude 65° 48', gives lowest barometer 28.06 inches and wind calm. It moved northwestward during the next two days, at a rate of about 600 miles per day (25 m. p. h.). On the morning of the 23d its center was at latitude 31½° N., longitude 73° W. During the preceding 12 hours it had begun to recurve to the northward. By the evening of the 23d it was central about 100 miles east of Cape Hatteras, being attended by winds of hurricane force near its center. It continued to move north-northeast, passing 100 miles or less to the east of Nantucket during the daylight hours of the 24th to the Straits of Belle Isle by the morning of the 25th, attended by gales over the Canadian Maritime Provinces approximating hurricane force near the center. It then moved rapidly northeast, being central over Iceland on the morning of the 27th with air pressure 28.44 inches and attended by gales. This hurricane moved at a rate considerably in excess of the normal and slowed up very little at the time of recurve, the trajectory being very smooth and not showing a sharp bend, as in the case of storms that are slow at the recurve.

Timely advices were issued twice daily or more to coast stations and to vessels by radio. The disturbance was of major intensity and hurricane winds were experienced near the center. Although advices were timely and accurate, considerable damage resulted to shipping off the New England coast and in the region of the Canadian Maritime Provinces.

On the morning of the 27th, storm warnings were ordered from Eastport to New York in connection with relatively low pressure south of Nantucket and high pressure over the Canadian Maritime Provinces, but winds did not reach dangerous proportions.

Small craft warnings were issued on the 9th, 15th, 18th, and 26th.

Frost warnings were not ordered or required.—*R. H. Weightman.*

## CHICAGO FORECAST DISTRICT

*Storm warnings.*—The month was marked by an unusual freedom from storms on the Great Lakes. Only two warnings of any character were issued, namely, small craft warnings on the 1st for the upper Lakes, except the Duluth section, and similar warnings on the 22d for all the upper Lakes.

*Frost warnings.*—These were issued as follows: On the 8th for low ground in northern Minnesota and extreme eastern North Dakota, also on the 22d for almost the same area; and on the 23d for most of Wisconsin and Michigan, northeastern Minnesota, and north-central Iowa. In addition, warnings were sent to the cranberry sections of Wisconsin on the 1st, 8th, 18th, 19th, 20th, 22d, 24th, and 25th. In most cases the frost occurred as forecast.—*C. A. Donnel.*

## NEW ORLEANS FORECAST DISTRICT

Moderate weather conditions prevailed over the district during the month of August. No storm warnings were ordered and no general storm winds occurred.—*I. M. Cline.*

## DENVER FORECAST DISTRICT

There was considerably more than normal activity, both in weather and temperature. There was not a single weather map, morning or evening, during the month that did not show precipitation somewhere in the district, and on 15 days of the month precipitation was recorded in every State in the district. At Denver the previous record of 16 days with 0.01 inch or more precipitation, in August, 1875, was exceeded by three days.

Generally speaking, barometric activity was sluggish and irregular. With the exception of one or two disturb-

ances that moved slowly eastward along the Canadian border, no well-defined storm centers crossed the district. There was the usual summer condition of low pressures over the Southwest and the Great Basin and a persistence of high pressure over the Missouri Valley, a condition always favorable to local showers and thunderstorms over the Rocky Mountain region in the summer months. No warnings of any kind were issued or required. Daily forecasts of wind conditions were furnished for forestry interests of western Montana, but the month was not one of high fire hazard in that region.—*E. B. Gittings.*

#### SAN FRANCISCO FORECAST DISTRICT

The North Pacific anticyclone maintained its normal position for the season throughout most of the month, and although it showed more than normal development, the velocity and direction of the winds along its southern and eastern periphery were about normal. The settled character of the weather along the great circle route between San Francisco and Honolulu made it possible to issue definite forecasts of wind and weather for the entire course with considerable assurance during the Dole Pacific flight and later during the intensive search for the three airplanes which failed to arrive at Honolulu. On the morning of departure, August 16th, the pilot or navigator of each airplane was handed a bulletin containing a detailed forecast of wind and weather over the entire route to be covered, together with a weather chart made up from data received the same morning from ships on the Pacific. Special bulletins were issued morning and evening from the 14th to the 22d and a special forecast was made for the airplane *Dallas Spirit* just before its departure from Oakland for Honolulu on the 19th. All of these ocean airway forecasts were verified in almost every detail.

Temperatures were above normal and humidity below normal throughout most of the month in the Pacific Northwest, except for a short period near the middle of the month in Idaho. Changes in the fire hazard were gradual and no special warnings were issued, the situation being covered from day to day in the general forecasts. However, special forecasts of mountain thunderstorms were issued for southern California on several occasions. At the request of the Forest Service special forecasts were issued for several areas where severe fires were in progress.

No storm warnings were issued during the month and none were necessary. No precipitation of consequence fell in California and no rain warnings were issued.—*Floyd D. Young.*

#### RIVERS AND FLOODS

By R. E. SPENCER

Heavy rains in four periods during August over Kansas, Oklahoma, southern Missouri, and Arkansas caused floods of varying magnitude in the rivers of the Topeka, Wichita, Fort Smith, and Little Rock River districts. The first rain period, from August 1 to 4, was followed by moderate rises in the first three of these districts; the second period, from the 6th to the 9th, affected only the Topeka and Fort Smith districts; the third, from August 12 to 17, which was by far the most serious, caused floods in all four districts; and the effects of the fourth, from August 23 to 27, were felt only moderately in the Topeka and Wichita districts.

*Topeka district.*—The rains of the first period were practically without consequence; but those of August 6-8 resulted in the overflow of a considerable area of farm land in the Blue River Basin and slight damage at Oswego, Kans., on the Neosho.

During the third period, following August 12, damaging overflows occurred along the Smoky Hill, the Blue, the Cottonwood, the Neosho, and in small streams where Weather Bureau gauges are not maintained. The heaviest losses occurred at Salina, Kans., where about half the area of the city was flooded and approximately \$500,000 damage was done. Losses in other portions of the Smoky Hill Valley amounted to about \$40,000, and one life was lost in Lincoln County. In the Blue River Basin the combined loss for the rise of this period and that following August 6, amounted to \$40,000, most of which occurred in Marshall and Washington Counties. In the Cottonwood Basin, Lyon, Chase, and Marion Counties suffered losses amounting to \$65,000. At and near Council Grove, Kans., on the Neosho, \$16,000 damage was done to bridges, highways, and business buildings; and further downstream, in the vicinity of Oswego, an additional \$15,000 loss occurred. At and near Fort Scott, Kans., where the rains were extremely heavy, one life was lost and \$206,000 damage was done. An additional \$6,000 is estimated also for the overflowing of small streams in the district.

The rains following the 22d occasioned a further rise in the upper Solomon, resulting in damages estimated at \$25,000.

Warnings were in the main timely and well verified.

*Wichita, Little Rock, and Fort Smith districts.*—In the Wichita district flood conditions followed closely each of the rainfall periods from the 2d to the 4th, after the 12th, and on the 27th, but the only one of the three having serious consequences was that following the 12th. The official in charge of the Weather Bureau office at Wichita, Kans., reports regarding this rise as follows:

In the period from the 13th to the 22d there were floods and recurrences of floods, merging into one another with barely a separate crest at times, over the section of the Arkansas River from Great Bend to Wichita, Kans., culminating in the highest stages ever known from just below Great Bend almost to the city limits of Wichita, and equaling the highest stage previously recorded at Wichita. At Great Bend the overflow covered 100 city blocks; Hutchinson reported 100 acres of city property overflowed; in Wichita the flooded area amounted to 160 acres; and in addition to the flooded areas in the cities about 40,000 acres were overflowed in Reno County and about 27,000 in Sedgwick County. Below Wichita the flood intensity was progressively diminished so that at Arkansas City the flooding was only moderate.

The total estimate of losses for the Wichita district for August was \$1,842,450, of which the greater part occurred in Barton County. The rains of the 12th and 13th in this county are reported as having been of such proportions as to result in overflow from creeks that covered some farm land to a depth of 6 feet. The value of property saved through Weather Bureau warnings was \$637,000.

In the Fort Smith district on the Arkansas River, the flood stage was passed on the 6th at Webbers Falls, Okla., but the rise was practically without consequence. On the Neosho, however, a comparatively serious overflow occurred just below the Kansas line following the rains of the 12th. Approximately 3,000 acres of land were inundated near Miami, Okla., and the damage to that vicinity was estimated at \$75,000. A saving of about \$25,000 was affected by the flood warnings.

In the Little Rock district the White River was in flood following the 17th, and water from that stream and